

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 86.08 cfs

Maximum Flow: 96.62 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 10

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 508+20 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
387.65	0.00	0.00	0.00	1
388.51	9.66	9.66	0.00	1
389.02	19.32	19.32	0.00	1
389.45	28.99	28.99	0.00	1
389.84	38.65	38.65	0.00	1
390.19	48.31	48.31	0.00	1
390.53	57.97	57.97	0.00	1
390.84	67.63	67.63	0.00	1
391.15	77.30	77.30	0.00	1
391.42	86.08	86.08	0.00	1
391.75	96.62	96.62	0.00	1
392.00	104.24	104.24	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 10

Total Rating Curve

Crossing: Crossing 10

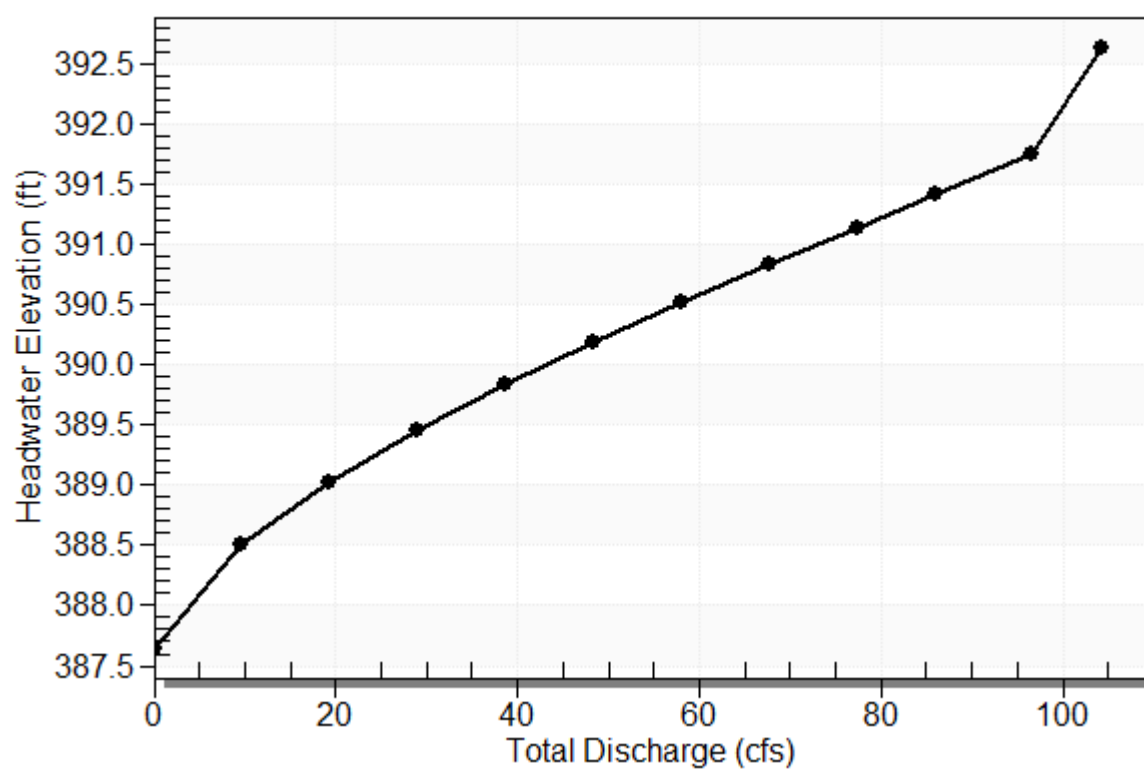


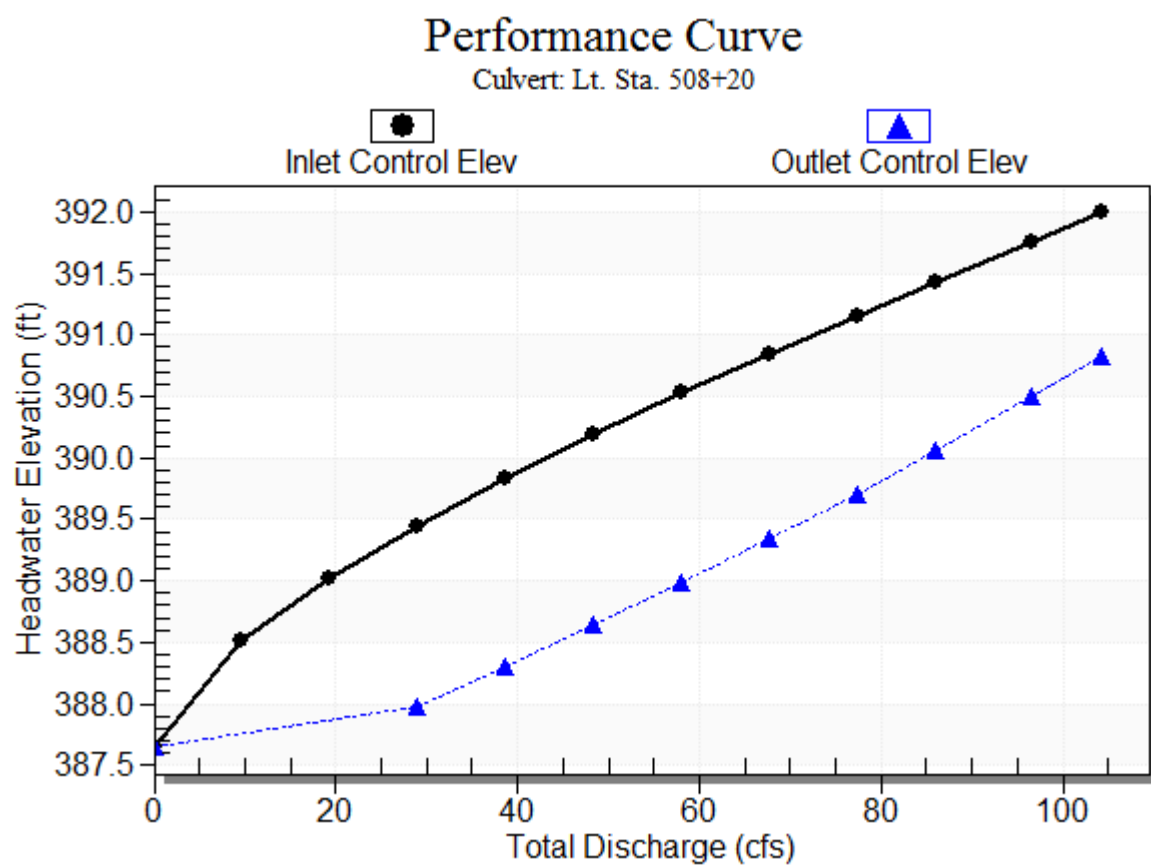
Table 2 - Culvert Summary Table: Lt. Sta. 508+20

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	387.65	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
9.66	9.66	388.51	0.865	0.0*	1-S2n	0.468	0.566	0.468	0.345	5.164	2.620
19.32	19.32	389.02	1.373	0.0*	1-S2n	0.758	0.898	0.758	0.520	6.377	3.367
28.99	28.99	389.45	1.799	0.324	1-S2n	0.998	1.177	1.005	0.660	7.214	3.882
38.65	38.65	389.84	2.187	0.655	1-S2n	1.222	1.426	1.229	0.780	7.864	4.285
48.31	48.31	390.19	2.545	0.990	1-S2n	1.437	1.655	1.437	0.888	8.405	4.620
57.97	57.97	390.53	2.877	1.334	1-S2n	1.639	1.868	1.646	0.987	8.804	4.908
67.63	67.63	390.84	3.191	1.690	1-S2n	1.838	2.071	1.846	1.078	9.157	5.162
77.30	77.30	391.15	3.496	2.061	1-S2n	2.030	2.263	2.040	1.163	9.474	5.390
86.08	86.08	391.42	3.770	2.411	1-S2n	2.203	2.432	2.203	1.237	9.768	5.579
96.62	96.62	391.75	4.103	2.850	5-S2n	2.405	2.627	2.412	1.321	10.014	5.788

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert
Inlet Elevation (invert): 387.65 ft, Outlet Elevation (invert): 386.69 ft
Culvert Length: 165.01 ft, Culvert Slope: 0.0058

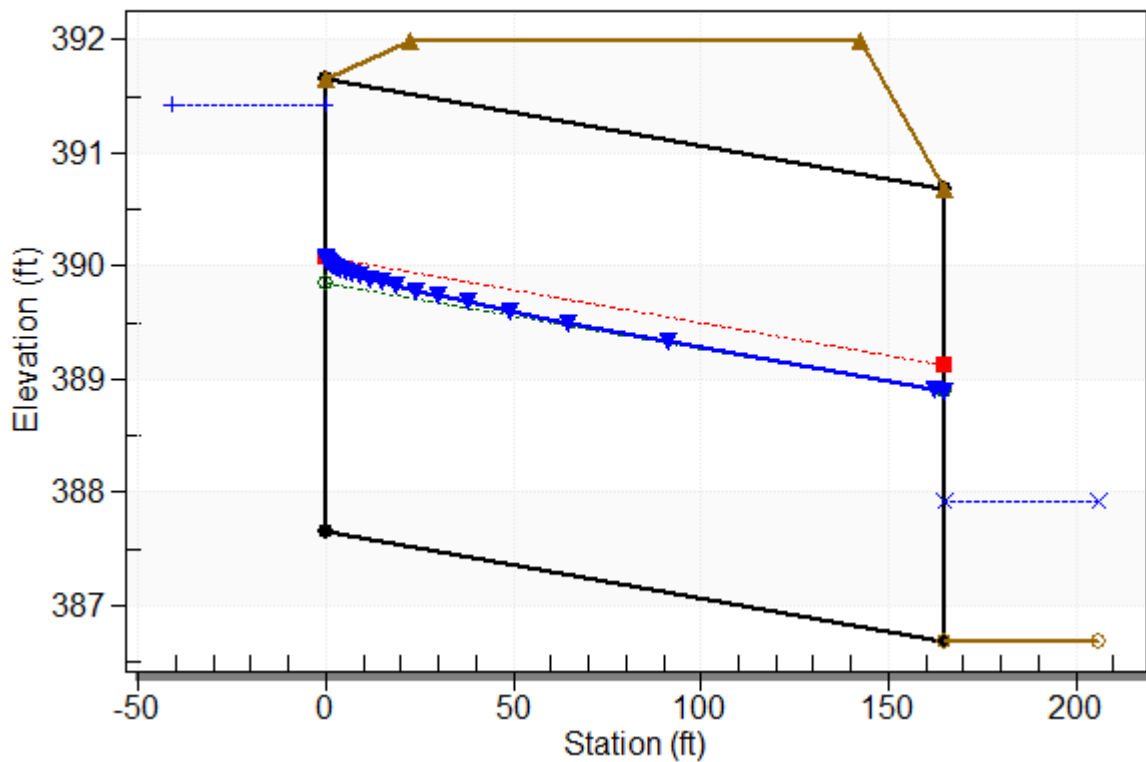
Culvert Performance Curve Plot: Lt. Sta. 508+20



Water Surface Profile Plot for Culvert: Lt. Sta. 508+20

Crossing - Crossing 10, Design Discharge - 86.1 cfs

Culvert - Lt. Sta. 508+20, Culvert Discharge - 86.1 cfs



Site Data - Lt. Sta. 508+20

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 387.65 ft

Outlet Station: 165.01 ft

Outlet Elevation: 386.69 ft

Number of Barrels: 1

Culvert Data Summary - Lt. Sta. 508+20

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 4.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (30-75° flare) Wingwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 10)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	386.69	0.00	0.00	0.00	0.00
9.66	387.04	0.35	2.62	0.43	0.81
19.32	387.21	0.52	3.37	0.65	0.86
28.99	387.35	0.66	3.88	0.82	0.89
38.65	387.47	0.78	4.29	0.97	0.91
48.31	387.58	0.89	4.62	1.11	0.93
57.97	387.68	0.99	4.91	1.23	0.94
67.63	387.77	1.08	5.16	1.35	0.95
77.30	387.85	1.16	5.39	1.45	0.96
86.08	387.93	1.24	5.58	1.54	0.97
96.62	388.01	1.32	5.79	1.65	0.98

Tailwater Channel Data - Crossing 10

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 10.00 ft

Side Slope (H:V): 2.00 (2:1)

Channel Slope: 0.0200

Channel Manning's n: 0.0375

Channel Invert Elevation: 386.69 ft

Roadway Data for Crossing: Crossing 10

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 392.00 ft

Roadway Surface: Paved

Roadway Top Width: 120.00 ft